

MCP 8715.1

BASELINE

EFFECTIVE DATE: December 3, 2020

EXPIRATION DATE: September 30, 2021

MARSHALL CENTER PLAN

DE01

ANNUAL SAFETY, HEALTH, AND ENVIRONMENTAL (SHE) PROGRAM PLAN FY 2021

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Concurrence Page

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E-concurrence received 10/29/20

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Document History Log

Status (Baseline/ Revision/ Change/ Revalidation/ Canceled)	Revision/ Change	Effective Date	Description
Baseline		12/3/2020	Updated data to reflect FY2020.

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1. PURPOSE

To outline the Center's policy, vision, goals, measurable milestones, and recommended actions to assist Marshall Space (MSFC) in improving the SHE Program in accordance with MPR 8715.1 and all other applicable Marshall Directives.

2. APPLICABILITY

2.1 This MCP applies to Center personnel, programs, projects, and activities, including contractors and resident agencies to the extent specified in their respective contracts or agreements. (“Contractors,” for purposes of this paragraph, include contractors, grantees, Cooperative Agreement recipients, Space Act Agreement partners, or other agreement parties.)

2.2 This MCP applies to the MAF.

2.3 This MCP applies the following: all mandatory actions (i.e., requirements) are denoted by statements containing the term “shall.” The terms: “may” or “can” denote discretionary privilege or permission, “should” denotes a good practice and is recommended, but not required, “will” denotes expected outcome, and “are/is” denotes descriptive material.

2.4 This MCP applies the following: all document citations are assumed to be the latest version unless otherwise noted.

3. AUTHORITY DOCUMENTS

MPR 8715.1, Annual Safety, Health, and Environmental (SHE) Program

4. APPLICABLE DOCUMENTS AND FORMS

4.1 OSHA General Industry Standards, 29 CFR 1910

4.2 OSHA Construction Standards, 29 CFR 1926

4.3 Marine Terminals, CFR 1917

4.4 Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters, 29 CFR 1960

4.5 Occupational Safety and Health Programs for Federal Employees, E. O. 12196

4.6 NPR 8553.1, NASA Environmental Management System

4.7 NPR 8621.1, NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping

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- 4.8 NPR 8715.1, NASA Occupational Safety and Health Programs
- 4.9 NPR 8715.3, NASA General Safety Program Requirements
- 4.10 MPR 1410.2, Marshall Directives System
- 4.11 MPR 3410.1, Training
- 4.12 MPR 8500.1, MSFC Environmental Engineering and Occupational Health Program
- 4.13 MPR 8500.2, MSFC Environmental Management System
- 4.14 MWI 1800.1, MSFC Occupational Medicine
- 4.15 MWI 3410.1, Personnel Certification Program
- 4.16 MWI 8621.1, Mishap and Close Call Reporting and Investigation Program
- 4.17 MWI 8715.5, Area/Building Manager Program
- 4.18 MWI 8715.13, Safety Concerns Reporting System (SCRS)
- 4.19 MWI 8715.15, Ground Operations Safety Assessment Program
- 4.20 MWI 8550.5, Hazardous Material Management
- 4.21 MC-12, MSFC Safety, Health, and Environmental (SHE) Committee
- 4.22 SHE 101, Introduction to the MSFC SHE Program
- 4.23 MSFC Form 4515, Incident Investigation Form

5. PLAN

The MSFC/MAF safety program uses Occupational Safety and Health Administration's (OSHA's) Voluntary Protection Program (VPP) Star certification criteria as a guide for this Plan. Self-assessment conducted during the prior year, internal or external audits and Independent Assessments, are also used in its development. This Plan emphasizes both the elements of the OSHA Star requirements and the MSFC Incident and Injury Free (IIF) initiative. Star elements and corresponding corrective actions begin in Section 5.4. Corrective actions were derived from annual self-assessment of current program. In addition to using VPP as a guide, the MSFC/MAF have embraced an IIF environment to move us toward a safety culture based on attitude and caring.

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5.1 SHE POLICY

5.1.1 SAFETY: MSFC/MAF strives to prevent human injury and ensure the safety of all operations and products in support of mission success.

5.1.2 HEALTH: MSFC/MAF strives to prevent occupational illnesses and to promote and maintain the physical and mental well-being of its employees to help ensure mission success.

5.1.3 ENVIRONMENTAL: Enabling NASA's mission by providing environmental compliance and stewardship and a safe and healthful workplace.

5.2 MSFC SHE VISION

5.2.1 SAFETY AND HEALTH (S&H)

5.2.1.1 No safety or health related injuries to workforce or public.

5.2.1.2 No safety-related property damage.

5.2.1.3 Full compliance with OSHA requirements for chemical handlers.

5.2.1.4 Excellent participation in medical monitoring program.

5.2.2 ENVIRONMENTAL

5.2.2.1 Environmental awareness and accountability throughout MSFC/MAF.

5.2.2.2 Innovative culture that achieves compliance while supporting the NASA mission.

5.2.2.3 Sustainable development and operations in Center programs.

5.2.2.4 Proactive communication to minimize risks to the successful implementation of compliance, restoration, and sustainability programs at MSFC/MAF.

5.3 FY 2021 SHE PROGRAM GOALS

5.3.1 Continued awareness of employees' authority to "Stop Work" when they observe an unsafe or unhealthy situation that has the potential to result in employee injury or property damage and encourage employees to implement this authority in these situations.

5.3.2 For operations identified as having a high or moderate overall risk, ensure the hazard analysis covering the operation has been reviewed and updated, if necessary, by the end of FY 2021.

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5.3.3 Encourage an increased involvement and engagement by employees in specific areas of the SHE programs, such as monthly worksite inspections with supervisors, participating in the development of safety assessments, identifying and correcting SHE related issues in the employee's work area during normal daily operations, and participating in the SHE Program employee feedback and suggestion program.

5.4 PROGRAM ELEMENTS AND ASSOCIATED CORRECTIVE ACTIONS

The Program requirements included below are considered the building block fundamentals for a successful S&H program. All requirements, except those associated with employee VPP Star awareness or VPP application, have been included. Some have been abbreviated for quick reference. Environmental initiatives and the IIF initiative have also been included within the scope of this Plan. The environmental elements are based on NPR 8553.1.

Note: Center management believes that we now have a fully implemented VPP-like SHE Program. However, we will seek continuous improvement of the goals established last year.

5.4.1 MANAGEMENT LEADERSHIP AND EMPLOYEE INVOLVEMENT

5.4.1.1 Management Commitment

a. Star Requirement:

Management demonstrates its commitment to S&H by:

- (1) Establishing, documenting, and communicating to employees and contractors clear and relevant goals, objectives, policies, and procedures.
- (2) Signing a statement of commitment to S&H.
- (3) Meeting and maintaining VPP requirements.
- (4) Maintaining a written S&H management system.
- (5) Identifying persons who are responsible for S&H and clearly defining their responsibilities in written job descriptions.
- (6) Assigning adequate authority to persons responsible for S&H.
- (7) Providing and directing adequate resources (time, funding, training, personnel, etc.) to those responsible.
- (8) Holding those assigned responsibility for S&H accountable for meeting their responsibilities through a documented performance standards and appraisal system.

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- (9) Planning for typical, as well as unusual, emergencies. S&H expenditures in the budget, including funding for prompt correction of uncontrolled hazards.
- (10) Establishing lines of communication with employees and allowing for reasonable employee access to top Center management.
- (11) Setting an example by doing everything they expect employees to do.
- (12) Ensuring that all employees (including contractors) are provided equal, high-quality S&H protection.
- (13) Conducting an annual evaluation of the S&H management system.

b. Program Evaluation:

- (1) Center management continues to make the Center's safety culture a top priority by maintaining a special management team headed by Safety and Mission Assurance (SMA) and the Office of Center Operations Directors to champion this cause. The Safety Culture Survey is one of the tools used to periodically assess the center's culture. The Safety Culture Survey Round 5 was initiated by the NASA Administrator to all centers who had less than 30% participation in Round 4. MSFC was one of the first five centers to conduct a Round 5 survey which was conducted from February 24 – March 27, 2020 by the Industrial Safety Branch of the Safety and Mission Assurance (SMA) Directorate. The survey was available to all MSFC/MAF contractor and civil servant employees, via electronically or paper copies. The survey was composed of 20 questions to cover the five factors of the safety culture: reporting, just, flexible, learning and engaged culture. Two questions focused on general agency culture and six questions were MSFC/MAF specific. There were 4,017 surveys completed with over 4,500 comments. The survey responses indicated MSFC has a good safety culture; however, there are concerns about the safety culture at MAF. Even though managers encourage employees to report safety concerns, there is still a fear of reprisal at both MSFC and MAF. The survey responses indicated a big concern about the conditions of the buildings at MSFC and MAF being unsafe to employee's health and life safety (exits blocked, inoperable elevator, air quality, etc.).
- (2) Supervisors are continuously reminded to keep safety assessments such as Hazard Analysis (HA), Job Hazard Analyses (JHAs), Workplace Safety Assessment, Personal Protective Equipment (PPE) assessments, and training assessments up-to-date as employees move to different/new work environments, and to understand that training beyond that identified in the SHE Training Assessment may be required. Clear and measurable goals are established each year as part of the SHE Program Plan and are communicated to all employees via one of the regular monthly safety meetings and the annual SHE refresher training.
- (3) The Annual Plan is approved by the SHE Committee and the Center Director. The SHE Program is assessed, documented, and audited annually. It identifies responsibilities and assigns authority. Adequate resources are provided to the responsible organizations, including special funding for correcting facility safety issues and for the SHE Committee. The Integrated

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Management System Council (IMSC), chaired by the Associate Director, holds managers accountable for meeting SHE goals. All employee performance appraisals are required to address safety. Guidelines are provided to supervisors to help with these appraisals. Written plans are maintained for all types of emergencies and funding has always been available for correction of any uncontrolled hazards. Supervisors conduct work site visits and hold regular meetings with employees. An open door policy is the norm.

c. Previous Actions: None

d. New Actions: None

5.4.1.2 Employee Involvement

a. Star Requirement:

(1) Employees may be involved in the S&H management system in at least three meaningful, constructive ways in addition to their right to report a hazard. Avenues for employees to have input into S&H decisions include participation in audits, accident/incident investigations, self-inspections, suggestion programs, planning, training, JHA, and appropriate S&H committees and teams. The Center Director encourages all employees to participate in MSFC's annual Safety Day activities. Safety Day 2020 was MSFC's first virtual Safety Day which consisted of a keynote speaker and a panel discussion. The Safety Day theme was Stay Safe and Keep Calm During Perilous Times. Safety and Mission Assurance also has several Mission Success is in Our Hands/Shared Experiences Forums throughout the year.

Note: Employees may meet this requirement by participating in incentive programs or simply working in a safe manner.

(2) Employees will be trained for the task(s) they will perform.

(3) Employees will receive feedback on any suggestions, ideas, reports of hazards, etc., that they bring to management's attention. A site will provide documented evidence that employees' suggestions were followed-up and implemented when appropriate and feasible.

b. Program Evaluation:

(1) MSFC management is committed to moving more toward employee engagement versus involvement in the SHE Program. Avenues for employees to have input into S&H decisions may include:

- (a) attending monthly SHE Committee meetings;
- (b) membership on SHE Subcommittees or teams;
- (c) participating in SHE audits;

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- (d) participating in supervisor worksite SHE visits;
 - (e) participating in an incident investigation;
 - (f) participating in the development of a safety assessment such as HA, JHA, Job Safety Analysis (JSA);
 - (g) participating in a readiness review for the startup of a facility or operation;
 - (h) submitting safety concerns by use of the Safety Concern Reporting System;
 - (i) submitting suggestions for improvements to the Center's SHE program by use of the employee feedback systems;
 - (j) serving in a SHE-related collateral duty role as an Area Manager, Building Manager, Assistant Building Manager, SHE Committee Representative, SHE organization Point of Contact (POC), or NASA Mishap Information System (NMIS) organization POC;
 - (k) providing presentations at SHE or safety meetings;
 - (l) providing SHE training; or
 - (m) participating in organization or team safety activities and initiatives.
- (2) A number of activities initiated/conducted in past years to improve employee participation in SHE activities are still ongoing. Examples include the comprehensive Safety Day Event, ongoing IIF discussion sessions, and increased use of MSFC's social network, "Inside Marshall SharePoint site." The "Caring in Action" (CIA) Program is still making positive impacts on our culture of caring. CIA recognizes employees for taking personal actions to aid, prevent, or correct potential safety and health incidents. In addition, training for new supervisors (SHE 118) has been modified to emphasize employee engagement in SHE activities. The MSFC Safety Concerns Reporting System (SCRS) is an electronic database to provide employees with a method to report any suspected unsafe, unhealthful, or hazardous condition, concern, or act. Feedback is provided to each reported concern and action taken via the SCRS database. In addition, every organization, both civil service and contractor, is required to conduct safety meetings at least monthly.

c. Previous Actions: None

d. New Actions: None.

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5.4.1.3 Contract Employee Coverage

a. Star Requirement:

Contractors must be provided with S&H protection equal in quality to that provided to civil service. This includes:

- (1) Following site S&H rules.
- (2) Having a documented oversight and management system that:
 - (a) Ensures S&H considerations are considered during selection process and on site.
 - (b) Encourages contractors to develop and operate effective SHE management systems.
 - (c) Includes timely identification, correction, and tracking of hazards.
 - (d) Includes provision for disciplinary actions for S&H noncompliances to include removal from premises.
- (3) Inclusion in host injury and illness rates.
- (4) Maintaining mishap rate data for all applicable contractors.
- (5) Contractor employees must be made aware of:
 - (a) The hazards they may encounter while on the worksite.
 - (b) How to recognize hazardous conditions and the signs and symptoms of workplace related illnesses and injuries.
 - (c) The implemented hazard controls, including safe work procedures.
 - (d) Emergency procedures.

b. Program Evaluation:

- (1) MSFC's contractor program is fully compliant with the VPP requirement. The contractor selection process involves an evaluation of the contractor's safety performance on previous contracts that are similar to the work the contractor will perform at MSFC and the methods the contractor will employ to comply with the MSFC SHE program requirements.
- (2) MSFC supports and encourages contractor participation in a Contractor Safety Forum. The Chairperson of that forum is the Deputy Chairperson of the Center's SHE Committee.

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(3) The contractor is required to submit data from contracts that the contractor is proposing as relevant to the type of work expected to be performed at MSFC. Part of the data submitted is the contractor's Days Away From Work Injury/Illness (DAFWII) rate and Total Case Rate (TCR). The DAFWII and TCR are compared to the Bureau of Labor Statistics, North American Industry Classification System (NAICS) for the provided contract. This evaluation provides MSFC with an indication of the safety practices implemented by the contractor for similar work.

(4) The contractor is provided MSFC safety requirements and requested to submit a SHE Plan specifically addressing the MSFC SHE program requirements. The contractor's SHE Plan is evaluated based on their understanding of the MSFC SHE program requirements and how they intend to comply with these requirements.

(5) After contract award, contractors are expected to perform activities and provide SHE data just as any MSFC organization would. This includes participation in the MSFC SHE Committee, issuance of awards and recognition for superior SHE performance achieving zero lost-time mishap milestones, and compliance with all Center SHE requirements.

(6) Contractors are required to complete the same SHE training as civil service employees. Special indoctrination training is provided for construction contractors and is available on-line for easy access.

c. Previous Actions: None.

d. New Actions: None.

5.4.1.4 Safety and Health Management System Annual Evaluation

a. Star Requirement:

There must be a system and written procedures in place to annually evaluate the S&H management system. This annual evaluation must be a critical review and assessment of the effectiveness of all elements and sub-elements of a comprehensive S&H management system. An annual evaluation that is merely a workplace inspection with a brief report pointing out hazards or a general statement of the sufficiency of the system is inadequate for purposes of VPP qualification.

b. Program Evaluation:

The MSFC S&H Program is fully compliant with this VPP requirement. An internal audit of the S&H Program is conducted annually by the Quality Management System (QMS) Audit Team. An Internal Safety Audit was performed at MSFC; there were no findings, but four concerned observations were noted. Audit findings are documented in the Center's Nonconformance Report (NCR) system and used to develop program improvement actions in this Plan. These actions are tracked in the Center-wide Action Item Tracking System (CAITS). Results of the internal audit, tri-annual external audits, and SMA Independent Assessment Team are used to assess the effectiveness of each VPP element. MSFC's procedure for conducting the annual evaluation of

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the SHE Program is documented in MPR 8715.1. Appropriate organizations, or SHE subcommittees, are assigned to perform a critical review of each related element. Therefore, the annual evaluation is not just a mere workplace inspection with a brief report pointing out hazards, but is a true assessment of the MSFC SHE Program that seeks ways to improve areas where weakness is found.

c. Previous Actions: None.

d. New Actions: None.

5.4.2 WORKSITE ANALYSIS

5.4.2.1 Baseline Safety and Industrial Hygiene Hazard Analysis

a. Star Requirement:

(1) Baseline Safety and Industrial Hygiene (IH) HA shall be performed for the entire worksite to identify and document common safety (such as those found in OSHA regulations or building standards for which existing controls are well known) and health hazards (usually by initial screening using methods such as, but not limited to, professional experience, review of workplace chemicals, and/or direct-reading instruments) associated with the worksite, and how they are controlled.

(2) HA of routine jobs, tasks, and processes that are perceived as high-hazard tasks must be performed to identify hazardous conditions and recommend adequate hazard controls methods. Acceptable techniques include, but are not limited to, JHA and Process Hazard Analysis (PrHA).

(3) HA of significant changes including, but not limited to, non-routine tasks, new processes, materials, equipment, and facilities must be conducted and lead to either hazard elimination or control.

(4) A pre-use analysis must be performed when a site is considering new equipment, chemicals, facilities, or significantly different operations or procedures and the S&H impact to the employees must be reviewed. This practice should be integrated in the procurement/design phase to maximize the opportunity for proactive hazard controls.

(5) Documentation and use of HA must include identification of the steps or procedures being analyzed, hazard controls currently in place, recommendations for additional or more effective controls, dates conducted, and responsible parties. This documentation must be used in the training of job procedures; in modifying workstations, equipment, or materials; and in future planning efforts. Further, it must be easily understood and updated as the environment, procedures, or equipment changes or errors are found.

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b. Program Evaluation:

(1) Greater improvements to the Center’s HA program/process are being realized with the Operations Tracking System (OpsTrak) implemented in FY 2012. OpsTrak has a better approach to tracking operations identified to have an increased level of risk for injury to employees or are considered as hazardous. The OpsTrak system has proven beneficial to the users and organizations in the review of their operations.

(2) Positive attitude changes at all levels toward reporting metrics have attributed to an improved safety culture. Dissemination of SHE metrics to organization representatives early within the month provides a heads-up to organizations to complete monthly requirements on time. Organizational metrics are part of the SHE metrics reported to the SHE Committee and MTM on a monthly basis. This helps motivate the supervisors to review and assess their processes. The JHA training course has been completed by supervisors and employees when identified in their SHE Training Assessment.

c. Previous Actions: None.

d. New Actions: None.

5.4.2.2 Routine Self-Inspections

a. Star Requirement:

A system is required to ensure routinely-scheduled self-inspections of the workplace. It must include written procedures that determine the frequency of inspections and areas covered, those responsible for conducting the inspections, recording of findings, responsibility for abatement, and tracking of identified hazards for timely correction. Findings and corrections must be documented.

b. Program Evaluation:

(1) This element is in place and effective. However, we are working to improve the Building Managers inspection program. Managers and supervisors perform monthly walk-through inspections of employee workplaces, as required by MPR 8715.1, Appendix F. Details of findings (both positive and negative) and associated corrective actions are documented in the Supervisor Safety Web Page (SSWP) database located from InsideMarshall SharePoint site search for “SHE,” scroll down, and then “Safety Tools & Apps.” Use of standard checklists which cover typical SHE inspection criteria is encouraged for these walk-throughs. Some supervisors have adopted the checklist for their specific worksite hazards or have developed their own checklist. The checklists are located on the SHE SharePoint site under Safety Information/Safety Assessments and select Safety Checklists.

(2) Building managers perform routine inspections of their buildings and surrounding areas, as required by MWI 8715.5. Details of these findings and associated corrective actions are

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documented and tracked to closure in the Safety, Health, and Environmental Finding Tracking System (SHEtrak) database.

(3) SHE professionals perform routine inspections of all buildings, structures, and construction sites at MSFC, as required by MPR 8715.1 and MWI 8715.12. The details of these findings and associated corrective actions are recorded in the SHEtrak database. Safety inspections are conducted weekly for construction sites, frequently for facilities containing operations with an elevated level of risk, and annually for all other locations. Audits are conducted annually for S&H to verify/ensure compliance with internal and VPP Star requirements, and for Environmental to verify/ensure compliance with NPR 8553.1 requirements. Findings and associated corrective actions are documented and tracked to completion within the Audit Tracking and Information System (ATIS) database.

(4) Due to COVID-19, MSFC has been operating in Stage 3 or Stage 4 which is Mandatory Telework since March 16, 2020. All building inspections and safety walkthroughs performed by supervisors, building managers and safety specialists were suspended by Industrial Safety until buildings return to normal operations. A note was posted on SSWP to inform participants that routine self-inspections were suspended. A waiver was submitted via DPac System as a corrective action/response to one of the observed concerns in the Internal Safety Audit.

c. Previous Actions: None.

d. New Actions: None.

5.4.2.3 Hazard Reporting System for Employees

a. Star Requirement:

The site must operate a reliable system that enables employees to notify management in writing, without fear of reprisal, about hazardous conditions and receive timely responses.

b. Program Evaluation:

MSFC has a well-established and effective employee hazard reporting system called SCRS documented in MWI 8715.13. Employees are able to report any suspected unsafe, unhealthy, or hazardous condition, concern, or act that they feel, if not corrected, will increase the risk of an employee injury or illness and/or damage to property or the environment. Employees may report their concerns anonymously via SCRS or via the Safety Office Hotline (4-HELP), Marshall Safety Action Team (MSAT) SharePoint site accessible via A-Z Index from InsideMarshall, and use of Safety Concerns Reporting System (SCRS) forms posted throughout the Center. An electronic database tracks the process from initial reporting to closure, including e-mail notification to the reporting employee, if known. Employees can also track status and action taken via InsideMarshall SharePoint site. A SHE Committee review process is established for concerns that the submitter or SHE officials feel have not been satisfactorily resolved. SCRS and other safety metrics are reported monthly to the Marshall Team Meeting (MTM), IMSC, and

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SHE Committee. Links are provided on the SSWP “Plan a Meeting” web page to allow supervisors to share open employee concerns with others as desired. Additionally, NMIS also contains a module that provides a method for employees to report safety concerns.

c. Previous Actions: None.

d. New Actions: None.

5.4.2.4 Industrial Hygiene Program

a. Star Requirement:

A written IH program is required. The program must establish procedures and methods for identification, analysis, and control of health hazards for prevention of occupational disease.

b. Program Evaluation:

(1) MPR 8500.1 documents activities and responsibilities of the Office of Center Operations, Environmental Engineering and Occupational Health (EEOH), management, and supervisors. Additional documents address specific programs, such as hearing conservation, ionizing and nonionizing radiation safety, asbestos, ergonomics, hazard communication, blood borne pathogens, and confined space entry. EEOH also conducts annual building surveys which incorporate health-related issues, such as laboratory fume hood flow rate checks, indoor air quality evaluations, airborne asbestos sampling, ergonomic surveys, and identification of chemical hazards. Other inspections are typically reactive in response to employee complaints. Findings are documented in SHEtrak and tracked until closure.

(2) The implementation of MWI 8550.5 and the proactive procurement process, a site-wide program for assessing materials and equipment prior to site introduction, has markedly increased the ability of IH to proactively identify hazards. Examples are avoidance of more toxic compounds, such as n-propyl bromide (NPB), and working with user organizations to identify and procure less noisy equipment. IH continues to work with organizations to find substitutes for NPB. NPB was used as a replacement for ozone-depleting substances but has recently been noted as having significant toxicity. The asbestos program has been a long-term effort that has grown to maturity. Insignificant quantities of asbestos have been removed from MSFC over the last year through building demolition and renovation activities. In all cases, IH was intimately involved in the process from pre-construction through project completion. The recent reduction in the threshold limit values (TLV) of manganese has resulted in reassessing exposure to welding fumes and use of appropriate control measures.

c. Previous Actions: None.

d. New Actions: None.

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5.4.2.5 Investigation of Mishaps

a. Star Requirement:

Industrial Safety within Safety and Mission Assurance or an appointed Investigating Authority must investigate all mishaps including close calls and maintain written reports of all investigations. Mishap investigations must:

- (1) Be conducted by personnel trained in accident investigation techniques. Personnel who were not involved in the accident or who do not supervise the injured employee(s) should conduct the investigation to minimize potential conflicts of interest.
- (2) Document the entire sequence of relevant events.
- (3) Identify all contributing factors, emphasizing failure or lack of hazard controls.
- (4) Determine whether the S&H management system was effective, and where it was not, and provide recommendations to prevent recurrence.
- (5) Not place undue blame or reprisal on employees, although human error can be a contributing factor.
- (6) Assign priority, time frames, and responsibility for implementing recommended controls.
- (7) Make available the results of investigations (to include, at a minimum, a description of the incident and the corrections made to avoid recurrence) to employees on request, although actual investigation records need not be provided.

Union participation is allowed in safety investigations as needed.

b. Program Evaluation:

The Center has an established and effective mishap (NASA reportable mishap and close call) reporting system. All reported incidents are fully investigated by a trained investigating authority, as defined in NPR 8621.1 and MWI 8621.1 and tracked to closure. MSFC's mishaps are investigated by the Industrial Safety Branch Safety Specialists. NASA Mishap Information System (NMIS) is used to document center mishaps, track NASA reportable mishap corrective actions and report hazards. Safety specialists perform an initial investigation immediately upon notification of an incident to help identify proximate causes and assure hazardous conditions are controlled. MSFC Form 4515 is used in this investigation to ensure that necessary information is gathered and appropriate actions are initiated. Open NASA reportable mishaps and close calls are reviewed at least monthly to ensure current status. A NASA-developed root cause analysis software application is used on major NASA reportable mishap investigations (Type A, Type B and High Visibility) to ensure root causes are identified. Corrective actions for all NASA reportable mishaps are reviewed by the Industrial Safety Branch. Corrective actions for major NASA reportable mishaps may be endorsed by the SHE Committee and/or MTM.

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c. Previous Actions: None.

d. New Actions: None.

5.4.2.6 Trend Analysis

a. Star Requirement:

The process must include an analysis of information, such as injury/illness history, hazards identified during inspections, employee reports of hazards, and accident and near-miss investigations for the purpose of detecting trends. The results of trend analyses may be shared with employees and management. Management may use this data to direct resources, prioritize hazard controls; and determine or modify goals, objectives, and training to address trends.

b. Program Evaluation:

The Center has an established and effective trend analysis program. Trends are maintained on all injury/illness records; types and numbers of hazards identified by SHE specialists, employees, and supervisors; and for NASA reportable mishaps and close calls. Plus, leading trends are maintained on incident reporting, SHE meetings and visits conducted, hazards identified during inspections, and facility work orders initiated to correct hazards identified during inspections. Data is presented monthly to the SHE Committee, the IMSC, and the MTM. The data is also maintained on InsideMarshall SharePoint site, which is available to all Center employees.

c. Previous Actions: None.

d. New Actions: None.

5.4.3 HAZARD PREVENTION AND CONTROL

5.4.3.1 Certified Professional Resources

a. Star Requirement:

Access to certified professionals and other licensed health care professionals is required. They may be provided by offsite sources such as corporate headquarters, insurance companies, or private contractors. OSHA will accept certification from any recognized accrediting organization.

b. Program Evaluation:

MSFC has fully implemented this element. Center personnel have access to Certified Safety Professionals (CSPs), Certified Industrial Hygienists (CIHs), Physicians, , Registered Nurses (RNs), , a Laser Safety Officer (LSO), Radiation Safety Officer (RSO), Radiofrequency Safety Officer (RFSO) and Environmental Professional Engineers onsite within the Office of Center

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Operations and the SMA Directorate. The Industrial Safety Branch has a Professional Engineer (PE) in fire protection, who serves as the Center Authority Having Jurisdiction (AHJ) for fire protection and life safety codes and standards. In addition, NASA has established a professional development program, called SMA Technical Excellence Program (STEP). The related instruction identifies the minimum level of training, knowledge, skills, and on-the-job experience to acquire each level of qualification. New employees to SMA are required to enroll in the STEP Program.

c. Previous Actions: None.

d. New Actions: None.

5.4.3.2 Hazard Elimination and Control Methods

a. Star Requirement:

Hazard types, severity levels, and risks posed to employees should all be considered in determining methods of hazard prevention, elimination, and control. In general, the following hierarchy should be followed in determining hazard elimination and control methods. When engineering controls have been studied, investigated, and implemented, but still do not bring employee exposure levels to below OSHA permissible exposure limits or are determined to be infeasible, then a combination of controls may be used. Whichever controls a site chooses to employ, the controls must be understood and followed by all affected parties; appropriate to the site's hazards; equitably enforced through the disciplinary system; written, implemented, and updated by management as needed; used by employees; and incorporated in training, positive reinforcement, and correction programs.

b. Program Evaluation:

(1) This element is fully implemented and effective at MSFC. A more user-friendly operations tracking database system, OpsTrak, implemented in December 2012 continues to enhance our program. Hazards identified by incident investigations are documented in the NASA-wide database called NMIS. Hazards identified in supervisor and manager self-inspections, building manager inspections, employee reports, SHE professional inspections, and by any other means are documented in the MSFC SHEtrak, SCRS and SSWP systems. All employee concerns and professional findings are prioritized with a due date and an abatement plan established, if needed. Caring In Action submissions are reviewed by the Marshall Safety (and Health) Action Team (MSAT) to see if a single action at one location onsite may need to be repeated elsewhere onsite to prevent an accident or eliminate a hazard.

(2) Action status is monitored by respective SHE organizations and reported to the SHE Committee monthly. Organizational level action metrics are presented to management at the IMSC on a monthly basis. Methods for controlling hazards identified to have an increased level of risk to cause/contribute to an accident, injury, illness, or damage to property or environment due to the nature of work being performed are documented in operating procedures or safety

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assessments, such as JHAs, and are required to be reviewed with employees frequently to ensure they are accurate and up-to-date. The reviews are performed at least annually, as a minimum. However, supervisors are reminded to keep JHA and PPE assessments updated and perform training needs assessments as employees move to different/new work assignments. The SSWP has been modified to automatically notify supervisors when a new training assessment is needed, including a required annual review of all existing assessments.

c. Previous Actions: None.

d. New Actions: None.

5.4.3.3 Rules, Procedures & Discipline

a. Star Requirement:

Employees must comply with all hazard control programs required by OSHA standards, such as PPE, Respiratory Protection, Lockout/Tag-out, Confined Space Entry, Process Safety Management, or Blood Borne Pathogens. VPP participants must periodically review these programs (most OSHA standards require an annual review) to ensure they are up-to-date.

b. Program Evaluation:

MSFC has established written procedures for all required OSHA programs (PPE, Respiratory Protection, Lockout/Tag-out, Confined Space Entry, Blood Borne Pathogens, and Hazard Communication). MSFC also has additional documented programs that implement OSHA requirements. These include, but are not limited to, Electrical Safety Program, Fire Safety, Ground Operations Safety Assessment Program, Hearing Conservation Program, and Asbestos Program. MSFC has an ISO 9001, QMS certification. MPR 1410.1 and MPR 1410.2 require annual reviews of S&H written procedures and updates as necessary. This annual review is an opportunity to ensure that MSFC documented programs incorporate the latest OSHA requirements. SHE checklists are developed to assist MSFC employees in assessing their work areas to ensure compliance with OSHA, NASA, and MSFC requirements. Additionally, all buildings are inspected annually by SHE professionals to help ensure compliance. Pre-operational briefings are conducted for operations identified as hazardous or contain an increased level of risk to cause/contribute to an accident, injury, illness, or damage to property or environment due to the nature of work being performed.

c. Previous Actions: None.

d. New Actions: None.

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5.4.3.4 Occupational Health Care Program

a. Star Requirement:

- (1) Licensed health care professionals must be available to assess employee health status for prevention, early recognition, and treatment of illness and injury.
- (2) Arrangements for needed health services such as pre-placement physicals, audiograms, and lung function tests must be included.
- (3) Employees trained in first aid, cardiopulmonary resuscitation (CPR) providers, physician care, and emergency medical care must be available for all shifts within a reasonable time and distance. The applicant, or participant, may consider, based on site conditions, providing Automated External Defibrillators (AEDs) and training in their use.
- (4) Emergency procedures and services including provisions for ambulances, emergency medical technicians, emergency clinics or hospital emergency rooms should be available and explained to employees on all shifts.

b. Program Evaluation:

- (1) MPR 8500.1 and MWI 1800.1 document activities and responsibilities of the Office of Center Operations EEOH organization and outline responsibilities of management and supervisors. The Occupational Medicine Program includes, medical monitoring for employees with exposures to workplace stressors, walk-in clinic services for NASA and contractor employees, minor urgent care treatment, and paramedic/ambulance services.
- (2) The Medical Center is staffed with licensed health care professionals that are certified in American Heart Association (AHA) Advanced Cardiac Life Support (ACLS). They provide medical oversight for the Center's AED program. The Medical Center went under a contract change in October 2019 which expanded its services for all team members, including contractor employees. The performance-based contract covers occupational medicine, industrial hygiene, health physics and respiratory protection, as well as Occupational Safety and Health Administration and NASA-specific work related physical exams, health maintenance exams, non-occupational urgent care, a flu shot clinic and other medical services using private medical insurance or other methods of payment. Therefore, the Medical Clinic is operating as an adult care walk-in clinic. Government provided contractor medical exams will be phased out during the course of the new contract. However, the contractors will have the opportunity to continue OSHA and NASA required physicals with a third party agreement with the onsite medical provider.
- (3) HEMSI provides onsite advance life support emergency medical services via paramedic crew during routine work hours and transport serious emergencies to local hospitals. After hours, first response is provided by the Redstone Arsenal Fire Department, with HEMSI providing advanced life support and hospital transportation as needed.

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(4) A counseling and referral program, under the auspices of Human Capital, assists employees with emotional, drug, and/or alcohol-related problems. A Fitness Center, under the auspices of the MSFC Exchange, is available to both civil service and contractor employees.

c. Previous Actions: None

d. New Actions: None.

5.4.3.5 Preventive Maintenance of Equipment

a. Star Requirement:

A written preventive and predictive maintenance system must be in place for monitoring and maintaining workplace equipment. Equipment must be replaced or repaired on a schedule, following manufacturer's recommendations, to prevent it from failing and creating a hazard. Documented records of maintenance and repairs must be kept. The system must include maintenance of hazard controls such as machine guards, exhaust ventilation, mufflers, etc.

b. Program Evaluation:

MSFC has fully implemented this element. The Facilities Management Office (FMO) has evaluated all facility-related equipment using a Reliability Centered Maintenance (RCM) approach to determine if Preventive Maintenance (PM) or Predictive Test and Inspections (PT&I) tasks are required. The FMO has PM and/or PT&I performed on all appropriate equipment through the Facilities Operations and Maintenance Support Services (FOMSS) Contract where RCM techniques are used to determine the effectiveness of the PM and PT&I efforts and adjust tasks accordingly. The Logistics Services Office (LSO) maintains vehicles and portable equipment and has an effective PM program. The LSO has PM and/or PT&I performed on all appropriate equipment through the Logistics Services for MSFC contract where RCM techniques are used to determine the effectiveness of the PM and PT&I efforts and adjust tasks accordingly. To further enhance the effectiveness of this program, mechanical integrity and management of change leading indicators were added to the current metrics.

c. Previous Actions: None.

d. New Actions: None.

5.4.3.6 Tracking of Hazard Correction

a. Star Requirement:

A documented system must be in place to ensure that hazards identified by any means (self-inspections, accident investigations, employee hazard reports, PM, injury/illness trends, etc.) are assigned to a responsible party and corrected in a timely fashion. This system must include methods for:

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- (1) Recording and prioritizing hazards, and
- (2) Assigning responsibility, time-frames for correction, interim protection, and follow-up to ensure abatement.

b. Program Evaluation:

MSFC has documented processes for performing inspection findings, incident investigation, and employee concerns. It includes inspections by SHE professionals, supervisors with employee participation, and building managers. A database system called SHEtrak is used to document and track inspection findings until satisfactory resolution. It includes priority based on severity, assigns actions, provides for abatement plans if needed for interim protection, and ensures follow-up by building managers and SHE professionals. A NASA-wide database called NMIS is used for documenting center mishaps and tracking NASA reportable mishaps and close call actions. The SCRS database is used for reporting and tracking employee reports of any suspected unsafe, unhealthful, or hazardous conditions, concerns, or acts that they feel are hazardous. The SHEtrak data base has been recently improved and is working well. Because of its effectiveness, other NASA Centers have adopted the SHEtrak database. It is now being used to track IH and environmental findings also.

c. Previous Actions: None.

d. New Actions: None.

5.4.3.7 Disciplinary System

a. Star Requirement:

A documented disciplinary system must be in place. The system must include enforcement of appropriate action for violations of the S&H policies, procedures, and rules. The disciplinary policy must be clearly communicated and equitably enforced to employees and management. The disciplinary system for S&H can be a sub-part of an all-encompassing disciplinary system.

b. Program Evaluation:

NASA has an all-encompassing disciplinary system that includes specific guidelines for S&H offenses or for failure to complete assigned safety training. This policy and other guidelines are posted on InsideMarshall SharePoint site and were added to the annual SHE refresher training. Contractors are required to maintain equivalent systems.

c. Previous Actions: None.

d. New Actions: None.

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5.4.3.8 Emergency Preparedness and Response

a. Star Requirement:

Written procedures for response to all types of emergencies (fire, chemical spill, accident, terrorist threat, natural disaster, etc.) on all shifts must be established, follow OSHA standards, be communicated to all employees, and be practiced at least annually. These procedures must list requirements or provisions for:

- (1) Assessment of the emergency.
- (2) Assignment of responsibilities (such as Incident Commander).
- (3) First aid.
- (4) Medical care.
- (5) Routine and emergency exits.
- (6) Emergency telephone numbers.
- (7) Emergency meeting places.
- (8) Training drills, minimally including annual evacuation drills. Drills must be conducted at times appropriate to the performance of work so as not to create additional hazards. Coverage of critical operations must be provided so that all employees have an opportunity to participate in evacuation drills.
- (9) Documentation and critique of evacuation drills and recommendations for improvement.
- (10) PPE where needed.

b. Program Evaluation:

MSFC has fully implemented this element. The Center has a comprehensive emergency management program that incorporates both OSHA and Homeland Security requirements and is cooperatively conducted through our partnerships with HEMSI, local hospitals, the Huntsville/Madison County Emergency Management Agency, and Redstone Arsenal. Training and practicing of plans are conducted across the year to ensure retention of skills. Fire drills are conducted annually in all buildings with occupancy of 10 or more people. Center-wide tornado drills are conducted annually. We continually strive to better prepare our MSFC workforce for all types of emergencies, and dealing with violence in the workplace is no exception. Year-round training is conducted to maintain national certification of emergency management personnel and skills to support program requirements. The Center has a voice Emergency

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Warning System (EWS) that is audible throughout the Center and a batch-messaging system that can send emergency messages to employees' cell phones and computers.

c. Previous Actions: None.

d. New Actions: None.

5.4.4 SAFETY AND HEALTH TRAINING

5.4.4.1 Star Requirement:

- (1) Training must be provided so that managers, supervisors, non-supervisory employees, and contractors are knowledgeable of their S&H responsibilities; how to carry out their S&H responsibilities; the hazards in the workplace; how to recognize hazardous conditions, signs, and symptoms of workplace-related illnesses; and safe work procedures.
- (2) Training required by OSHA standards must be provided in accordance with the particular standard.
- (3) Managers and supervisors must understand their S&H responsibilities and how to carry them out effectively.
- (4) New employee orientation/training must include, at a minimum, discussion of hazards at the site, protective measures, emergency evacuation, employee rights under the Occupational Safety and Health (OSH) Act of 1970 and VPP.
- (5) Training should be provided for all employees regarding their responsibilities for each type of emergency. Managers, supervisors, and non-supervisory employees, including contractors and visitors, must understand what to do in emergency situations.
- (6) Persons responsible for conducting HAs, including self-inspections, accident/incident investigations, JHAs, etc., must receive training to carry out these responsibilities, e.g., hazard recognition training, accident investigation techniques, etc.
- (7) Training attendance must be documented. Training frequency must meet OSHA standards; non-OSHA required training must be provided at adequate intervals. Additional training must be provided when new work processes, new equipment, new procedures, etc. occur.
- (8) Training curricula must be up-to-date, specific to worksite operations, and modified when needed to reflect changes and/or new workplace procedures, trends, hazards, and controls identified by HAs. Training curricula must be understandable for all employees.
- (9) Persons who have specific knowledge or expertise in the subject area must conduct training.

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(10) Where PPE is required, employees must understand that it is required, why it is required, its limitations, how to use it, and maintenance.

5.4.4.2 Program Evaluation:

(1) MSFC SHE Training Program is fully implemented and effective. All SHE training required for both civil service and contractor managers, supervisors, and employees is identified by completing the SHE Training Assessment located on the SSWP. All new employees are required to take SHE 101, "Introduction to the MSFC SHE Program." Construction contractors are required to take SHE 101C, "SHE Program Construction Awareness Training." Training is delivered by an instructor or via a website. A large number of safety courses are taught by the NASA Safety Training Center (NSTC). In FY 2012, a forklift safety course was developed which can be used for initial certification and refresher training; other certification classes are still being developed at MSFC. The NASA Safety Center (NSC) used the MSFC-developed training module, MSFC-SHE-122, "Pressure System Essentials," as a basis for development of a STEP operational safety course. NASA has a training database called System for Administration, Training, and Education Resources for NASA (SATERN). Civil service employee training records are maintained in this system. It may be used by contractors at their option. Contractors are required to report SHE training completion status through the Contracting Officer's Representative (COR) monthly.

(2) The SHE Training Subcommittee believes it has identified all operations identified as hazardous or containing an increased level of risk to cause/contribute to an accident, injury, illness, or damage to property or environment due to the nature of work being performed and other tasks which require regulatory training at MSFC. These operations are identified in the SHE Training Assessment which, in-turn, dictates which training is required by OSHA (noted as regulatory training in the assessment). Specific SHE classes have been either developed for these operations, provided by NSTC, or conducted by an outside contractor who specializes in a designated field (i.e., Fire Hazards in Oxygen Systems –provided by instructors from White Sands). All SHE training modules are required to be reviewed once a year. This database program displays courses that need an annual review with electronic reminders. Supervisors are required to conduct annual reviews to assure courses are up-to-date. Incident Investigation and Employee Engagement for Supervisors, Safety and Mission Success (SMS) Employee Training for SHE Committees, and JHA/Operations (OPS) reviews for employees were added to the program this year. Basic required SHE training metrics for civil service employees are reported to the SHE Committee, IMSC, and MTM. Metrics for other civil-service-required and contractor-required SHE training are still being developed.

5.4.4.3 Previous Actions: None.

5.4.4.4 New Actions: None.

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5.4.5 ENVIRONMENTAL

5.4.5.1 Environmental Management System

a. Star Requirement:

NPR 8553.1 specifies requirements for an Environmental Management System (EMS) that enable the site to develop and implement a policy and objectives which take into account legal requirements and information about significant environmental aspects. The success of the system depends on commitment from all levels and functions of the organization, especially top management. A system of this kind enables an organization to achieve the policy commitments, take action as needed to improve its performance, and demonstrate the conformity of the system to the requirements. NPR 8553.1 further states that Centers seek external EMS recognition through the International Organization for Standardization (ISO) 14001 certification or issue an EMS Declaration of Conformance.

b. Program Evaluation:

EEOH is responsible for ensuring conformance with NPR 8553.1. MSFC successfully maintained its ISO 14001 certification from December 2006 through November 2015. Evaluation of the EMS performance in 2015 indicated that 14001 registration is no longer required to maintain MSFC's Environmental program excellence. MSFC currently issues a Declaration of Conformance every third year, following the results of the HQ-led Environmental & Energy Functional Review (EEFR). EMS audits by the MSFC Internal Audit Team or by EEFR are conducted annually to ensure continued conformance to NPR 8553.1. Other environmental actions are captured by Environmental Management Programs (EMPs) and tracked to closure within the EMS.

c. Previous Actions: None.

d. New Actions: None.

5.4.5.2 Environmental Compliance

a. Star Requirement:

EEOH is responsible for ensuring compliance with all applicable environmental regulations and Presidential Executive Orders and coordinating all activities that impact the environment. This includes all environmental areas, such as compliance with air regulations, hazardous waste regulations, wastewater and storm water regulations, chemical management regulations, spills and releases, and oil pollution regulations.

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b. Program Evaluation:

EEOH evaluates compliance by conducting audits and inspections that focus on continual improvement of environmental procedures and practices. Compliance inspections by EEOH and the environmental support contractor are conducted routinely to ensure compliance with environmental laws and regulations. Compliance audit findings are documented in SHEtrak to ensure that corrective action is taken, and findings are tracked to closure. Audit results continue to show that MSFC has an excellent compliance program.

c. Previous Actions: None.

d. New Actions: None.

5.5 SAFETY PERFORMANCE RATES FOR PREVIOUS 3 YEARS

The MSFC team (Civil Service and Contractors) metrics represent the total of all injury and illness cases that occur at MSFC, with or without lost workdays or restricted activity. The MSFC team incidence rates may be compared to industry averages as listed by the NAICS. A potential comparable code is NAICS 5417, "Scientific Research and Development Services." For that code, the latest reported (2020) DAFWII is 0.4 and TCR is 0.9.

5.5.1 MSFC (Civil Service Only) and MSFC Team (Civil Service and Contractors)

CY	DAFWII (Civil Service)	Team DAFWII (Civil Service + Contractor)	TCR (Civil Service)	Team TCR (Civil Service + Contractor)
2018	0.1	0.1	0.1	0.2
2019	0.0	0.1	0.2	0.4
2020	0.0	0.2	0.0	0.1

Property Damage Mishaps are the number of on-site NASA reportable mishaps resulting in property damage of \$20,000 or greater. The Property Damage Mishap Rate is the number of NASA reportable mishaps per 200,000 hours worked.

FY	Property Damage Mishaps*	Property Damage Mishap Rate
2018	1	.043
2019	1	.043
2020	0	0

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6. Cancellation

MCP 8715.1, Baseline, Annual Safety, Health, and Environmental (SHE) Program Plan FY 2020, dated September 6, 2019.

Steven C. Miley for
Jody Singer
Director

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Appendix A - Acronym List

AAAH	Accreditation Association of Ambulatory Health Care
ACLS	Advanced Cardiac Life Support
AED	Automated External Defibrillator
AHA	American Heart Association
AHJ	Authority Having Jurisdiction
ATIS	Audit Tracking and Information System
CAITS	Center-wide Action Item Tracking System
CIA	Caring in Action
CIH	Certified Industrial Hygienist
LSO	Certified Laser Safety Officer
COR	Contracting Officer's Representative
CPR	Cardiopulmonary Resuscitation
CSP	Certified Safety Professional
DAFWII	Days Away From Work Injury/Illness
EEOH	Environmental Engineering and Occupational Health
EMS	Environmental Management System
EPA	Environmental Protection Agency
EWS	Emergency Warning System
FMO	Facilities Management Office
FOMSS	Facilities Operations and Maintenance Support Services
FY	Fiscal Year
HA	Hazard Analysis
HEMSI	Huntsville Emergency Medical Services, Inc.
HQ	Headquarters
IFOSA	Institutional, Facility, Operational Safety Audit
IIF	Incident and Injury Free
IH	Industrial Hygiene
IMSC	Integrated Management System Council
ISO	International Organization for Standardization
JHA	Job Hazard Analysis
JSA	Job Safety Analysis
LSO	Logistics Services Office
MAF	Michoud Assembly Facility
MCP	Marshall Center Plan
MPR	Marshall Procedural Requirement
MSAT	Marshall Safety Action Team
MTM	Marshall Team Meeting

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NAICS	North American Industry Classification System
NCR	Nonconformance Report
NFPA	National Fire Protection Association
NMIS	NASA Mishap Information System
NPB	n-propyl bromide
NSC	NASA Safety Center
NSTC	NASA Safety Training Center
OPS	Operations
OpsTrak	Operations Tracking System
OSH	Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
PE	Professional Engineer
PM	Preventive Maintenance
POC	Point of Contact
PPE	Personal Protective Equipment
PrHA	Process Hazard Analysis
PT&I	Predictive Test and Inspections
QMS	Quality Management System
RCM	Reliability Centered Maintenance
RN	Registered Nurse
RSO	Radiation Safety Officer
RFSO	Radiofrequency Safety Officer
S&H	Safety and Health
SATERN	System for Administration, Training, and Educational Resources for NASA
SCRS	Safety Concerns Reporting System
SCWG	Safety Culture Working Group
SHE	Safety, Health, and Environmental
SHetrak	Safety, Health & Environmental Finding Tracking System
SMA	Safety and Mission Assurance
SMS	Safety and Mission Success
SSWP	Supervisor Safety Web Page
STEP	SMA Technical Excellence Program
TCR	Total Case Rate
VPP	Voluntary Protection Program